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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/807,628	04/16/2001	Melvyn John Hunt	WN/LM/DRA.3.	9699

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EXAMINER

LEWIS, MICHAEL A

ART UNIT	PAPER NUMBER
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2655

DATE MAILED: 03/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/807,628

Applicant(s)

HUNT, MELVYN JOHN

Examiner

Lewis A Michael

Art Unit

2655

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 4/16/01.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-14 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 03.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1,2,3,11 & 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Eatwell (U.S. Patent 5742694).

Regarding claims 1 & 11, Eatwell discloses an apparatus for predicting the speech level in an utterance of a speaker exposed to an environment containing a variable level of ambient acoustic noise, the apparatus comprising means for measuring said ambient acoustic noise level, and processing means for using said measured acoustic noise level to predict the likely speech level in said utterance. Eatwell describes an apparatus that produces a prediction of the input signal and its' level based on noise level measurements from which the signal level can be derived (Fig 8 (20,21,22); Col 12, Lines 48 – 60)).

Regarding claim 2, Eatwell discloses a means of measuring the ambient acoustic noise level immediately adjacent to the utterance. The input signal is delayed to provide the previous input signal by the use of the previous output sample which is subtracted from

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the previous input signal to provide an estimate of the previous noise signals (Col 12, 35 – 41).

Regarding claims 3 & 12, Eatwell discloses a means for activating the measuring before the utterance (Col 11, Line 32).

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 4 -9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eatwell (U.S. Patent 5742694) in view of DesBlache et al. (U.S. Patent 4672669) and further in view of Brickman et al. (4328543).

Regarding claim 4 & 5, Eatwell discloses a means to define, for each utterance, an utterance period comprising a first time period for measuring the acoustic noise level. Eatwell describes a noise power that is measured either by a voice activity detector (VAD) or by measuring the time between successive minimas in the input power. Eatwell does not teach explicitly a second time period for measuring/defining the time period of the utterance. However, DesBlache et al. teach the use of measuring the energy of the speech signal during short periods of time and comparing it to a pre-specified threshold level to make the determination of speech (Col 1, Line 30 – 40). Voice Activity Detection is used in communication systems to maximize the amount of users on the same channel in order to save communication cost.

Therefore, it would have been obvious to one of ordinary skill at the time of the invention to modify Eatwell with the addition of information on voicing time as taught by DesBlache et al. since it would have been beneficial to digital communication systems.

The modified Eatwell does not disclose the use of a timer or an indicator for the first or second time period. However, Brickman et al. teach the use of an indicator with a timer that is used in a communications controller for connecting a plurality of internal processing subunits that operate at different data rates (Abstract; Col 62, Lines 45 – 60). In general, timers and indicators are used for

switching and other functions within integrated circuits that depend on timing and synchronization.

Therefore, it would have been obvious to one of ordinary skill at the time of the invention to modify the modified Eatwell with the addition of a timer and indicator as taught by Brickman et al. since it would have been beneficial to add timing and synchronization to a digital communication system.

Regarding claims 6, Eatwell discloses that the apparatus is responsive to a succession of one or more utterances by a speaker, and a measuring means is operable to measure the ambient noise level prevailing at each of said utterances to provide a series of noise values, and said apparatus includes means for measuring the speech level of an utterance, and that the processing means uses at least two of said noise values, together with a value representative of the speech level of the immediately previous utterance, to predict the likely speech level of the next utterance. Eatwell describes the calculation of the noise and signal power by measuring the input signal power during pauses and activity in the speech with the use of a voice activity detector.

Eatwell discloses a prediction filter uses successive noise information in speech to predict speech level information where the speech level information is expressed as function of the noise (Eqn. 7, Col 11, Lines 5 & 40).

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Regarding claim 7, Eatwell discloses that the prediction can be expressed mathematically using the difference between the input speech utterance level and its' previous value which is proportional to [is a function of] the difference level of the measured noise sample and its' previous value (Eqn. 4, 7,38 and Col 9, line 10 - 50).

Regarding claim 8, based on the mathematics of Eqn. 7 in Eatwell, it can be proven that the ratio of the differences of the signal and noise samples is equal to a constant [prediction coefficient] k .

Regarding claim 9, referring to the mathematics discussed in claim 8, the optimal prediction coefficient k can then be constrained to the optimum value including $0 < k < 0.6$ based on the empirical results.

4. Claim 10 & 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eatwell (U.S. Patent 5742694) in view of Wu et al. (U.S. Patent 6216103)

Regarding claim 10, Eatwell discloses an apparatus for predicting the speech level in an utterance of a speaker exposed to an environment containing a variable level of ambient acoustic noise, the apparatus comprising means for

measuring said ambient acoustic noise level, and processing means for using said measured acoustic noise level to predict the likely speech level in said utterance (Fig 8 (20,21,22); Col 12, Lines 48 – 60)). Eatwell does not disclose the use of implementing a speech recognizer with the ability to measure and control speech level with background noise. However, Wu et al. teaches a method of implementing a speech recognition system to determine speech endpoints during conditions with background noise (Title; Abstract). The ability to measure and control the speech level in background noise using a preprocessor improves the performance of a speech recognizer.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Eatwell with the use of a speech recognition system as taught by Wu et al. since preprocessing the speech with control of speech level in noise would have improved the accuracy of the speech recognition system.

Regarding claim 14, the modified Eatwell discloses the gain control [Adjust] feature for the control of the speech output level (Fig. 1(9,10)).

Conclusion


1. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Graupe et al.	U.S. Patent (4185168)
Shenk	U.S. Patent (6466631)
Sakata	U.S. Patent (4656041)
Imai	U.S. Patent (6125288)
Erving et al.	U.S. Patent (5187741)
Tadashi	European Patent (1052620)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael A. Lewis whose telephone number is 703 305-8730. The examiner can normally be reached on Monday through Friday, 8:30 am – 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Doris To can be reached on (703)305-4827. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


DORIS H. TO 3122104
SUPERVISORY PATENT EXAMINER
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Lewis A Michael
Examiner
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Mal

3/19/2004